



*We do the right thing.*

# RAD VERSUS NONRAD CONTROLS COMPETING HAZARDS

August 27, 2009

Ed Kvartek, Industrial Hygienist

2009 ISM Workshop

Exposure Hazards

# Heat Stress Events at SRS in 2008

Date	Worker	Location	Temp (F)	
4/24	Female 53	Indoor	73	
6/9	Male 50	Outdoor	97.8	
6/28	Female 46	Indoor	84	
7/13	Female 44	Outdoor	90.5	
7/22	Male 59	Indoor	75.6	
7/28	Male 57	Outdoor Hut	97.8	
9/18	Male 22	Outdoor	Low 80's	

# Heat Stress Events at SRS in 2008

Date	Worker	Location	Temp (F)	PPE
4/24	Female 53	Indoor	73	<b>One pair PCs &amp; APR-FF</b>
6/9	Male 50	Outdoor	97.8	<b>Two pair PCs &amp; APR-FF</b>
6/28	Female 46	Indoor	84	<b>Two pair PCs &amp; APR-FF</b>
7/13	Female 44	Outdoor	90.5	<b>Two pair PCs &amp; APR – FF &amp; Acid suit pants</b>
7/22	Male 59	Indoor	75.6	<b>Two pair PCs &amp; APR – FF</b>
7/28	Male 57	Outdoor Hut	97.8	<b>Two pair PCs &amp; PSAR</b>
9/18	Male 22	Outdoor	Low 80's	<b>Two pair PCs &amp; APR – FF</b>

# Issue - Rad versus nonrad activities are often controlled differently

## – Rad controlled ALARA

- Often treated as having no threshold
- Skin contamination unacceptable
- Inhalation infers job was out of control

## – Nonrad generally controlled ALAP

- Threshold based
- Skin contact minimized but often acceptable
- Inhalation minimized but accepted for many chemicals

# Impact of This Reality

- Rad controls take precedence in mixed environments
- Benefit
  - Rad controls often address nonrad chemicals
- Disadvantage
  - Conflicts that do arise in day-to-day operations may create confusion and less than ideal controls

# Examples of Hazards

- **Radiological Hazards**
  - Radiation (alpha, beta, gamma, neutron)
  - Contamination on surfaces and in the air
  - Tritium
- **Industrial Hygiene Hazards**
  - Chemicals - aerosols, gases & vapors, fibers
  - Heat stress (big deal in South Carolina)
  - Noise
- **Industrial Safety Hazards**
  - Slips & falls
  - Falling objects
  - Confined spaces

# Examples of Where Conflicts Arise

- Respirators for potential – particularly for transuranics
  - Limits visibility
  - Introduces tripping hazards
- PPE used to prevent skin contamination
  - Increases heat stress
  - Introduces air loss hazard
  - Impact use of hearing protection
- Exposure increased by competing controls
  - Work may be slowed by respiratory protection use
  - Heat stress controls (air movement) may increase hazard

# Is This an Opportunity to Improve Integrated Safety at DOE Projects?

- Perhaps –
  - Apply controls commensurate with the real risks.
  - Reduce concern for skin contamination
  - Focus uptake controls on alpha facilities
- Benefits?
  - Possibly lower exposures due to increased efficiencies
  - Production efficiency gain
  - Increased safety



# How to Change?

- Obtain buy-in from DOE leadership
  - Address *Integrated Risk* potentials
  - Focus on worker protection versus *Perceived Risk*
- Update contractor programs
- Educate workforce clearly and carefully

# Possible Mechanism for Change

- Industry groups offer the best path forward
  - Work with DOE through Energy Facility Contractors Group (EFCOG)
  - Gather experience from the Institute of Nuclear Power Operations (INPO) and utilities
  - Plan and execute